

Annex 1: Measurement diagrams to
TEST REPORT
 No.: 16-1-0141801T07b-C1

According to:
FCC Regulations
 Part 22, Part 24

IC-Regulations
 RSS-132 Issue 3, RSS-133 Issue 6,
 RSS-Gen Issue 4

for

Daimler Trucks North America

ECU
 CTPBASEDTNA

FCC-ID: 2AKC8CTP054631
 IC: 22221-CTP054631
 HVIN: CTPBASEDTNA
 PMN: CTPBASEDTNA
 FVIN: 16.095.2







Laboratory Accreditation and Listings			
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 WiFi ALLIANCE AUTHORIZED RF LABORATORY	 ctia Authorized Test Lab Lab Code: 20011130-00		
accredited according to DIN EN ISO/IEC 17025			
<p align="center"> CETECOM GmbH Laboratory Radio Communications & Electromagnetic Compatibility Im Teelbruch 116 • 45219 Essen • Germany Registered in Essen, Germany, Reg. No.: HRB Essen 8984 Tel.: + 49 (0) 20 54 / 95 19-954 • Fax: + 49 (0) 20 54 / 95 19-964 E-mail: info@cetecom.com • Internet: www.cetecom.com </p>			

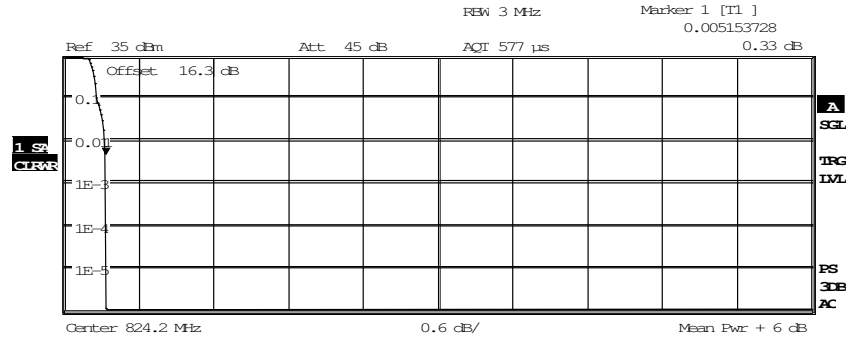
Table of contents

1. MEASUREMENT DIAGRAMS.....	3
1.1. Power Measurements and PAPR-Value	3
1.2. Magnetic field emissions radiated (850 MHz transmitting mode).....	10
1.3. Magnetic field emissions radiated 1900 MHz transmitting mode).....	11
1.4. Spurious emissions radiated (850 MHz transmitting mode).....	12
1.5. Spurious emissions radiated (1900 MHz transmitting mode).....	13
1.6. Radiated emissions on 850 MHz transmitting band-edge.....	14
1.7. Radiated emissions on 1900 MHz transmitting band-edge.....	16

1. Measurement diagrams

1.1. Power Measurements and PAPR-Value

1.1.1. GSM 850 (GMSK Modulation)



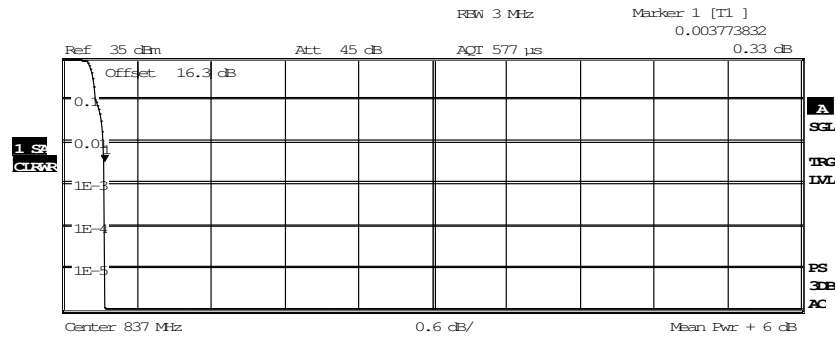
Complementary Cumulative Distribution Function
NCF samples: 2308, Usable BW: 3.5MHz

Trace 1
 Mean 32.45 dBm
 Peak 32.78 dBm
 Crest 0.33 dB

10 %	0.26 dB
1 %	0.33 dB
.1 %	0.34 dB
.01 %	0.34 dB

Date: 21.DEC.2016 11:33:38

Diagram CCDF_128_GMSK



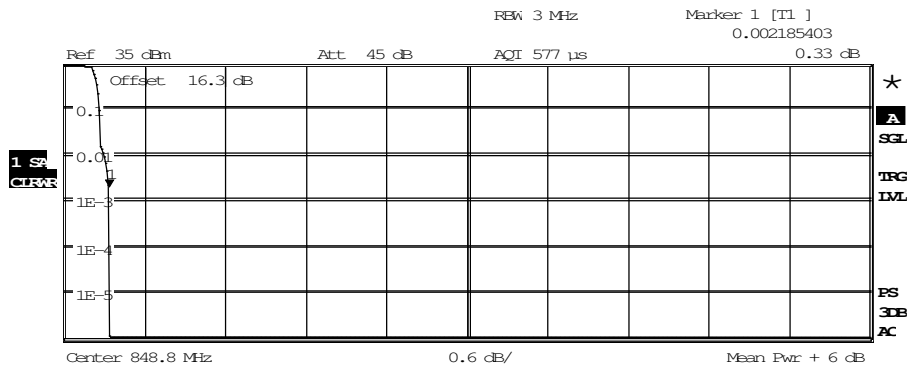
Complementary Cumulative Distribution Function
NCF samples: 2308, Usable BW: 3.5MHz

Trace 1
 Mean 32.38 dBm
 Peak 32.71 dBm
 Crest 0.33 dB

10 %	0.26 dB
1 %	0.33 dB
.1 %	0.34 dB
.01 %	0.34 dB

Date: 21.DEC.2016 11:35:24

Diagram CCDF_192_GMSK



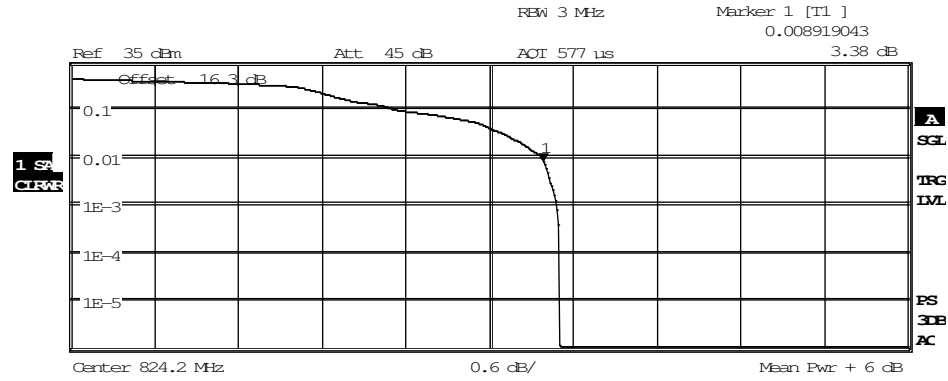
Complementary Cumulative Distribution Function
 NOF samples: 2308, Usable BW: 3.5MHz

Trace 1	
Mean	32.30 dBm
Peak	32.64 dBm
Crest	0.34 dB
10 %	0.26 dB
1 %	0.30 dB
.1 %	0.34 dB
.01 %	0.34 dB

Date: 21.DEC.2016 11:37:43

Diagram CCDF_251_GMSK

1.1.2. GSM 850 (8-PSK Modulation)

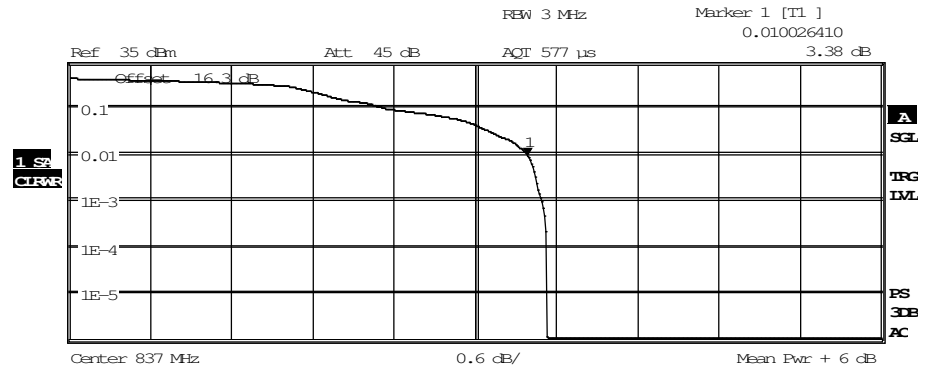


Complementary Cumulative Distribution Function
 NCF samples: 2308, Usable BW: 3.5MHz

Trace 1	
Mean	24.34 dBm
Peak	27.84 dBm
Crest	3.50 dB
10 %	2.36 dB
1 %	3.38 dB
.1 %	3.48 dB
.01 %	3.51 dB

Date: 21.DEC.2016 11:25:16

Diagram CCDF_128_8PSK

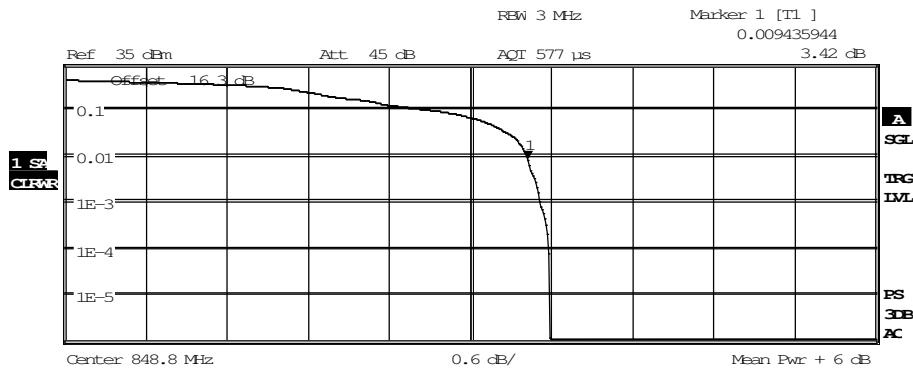


Complementary Cumulative Distribution Function
 NCF samples: 2308, Usable BW: 3.5MHz

Trace 1	
Mean	24.24 dBm
Peak	27.77 dBm
Crest	3.53 dB
10 %	2.37 dB
1 %	3.38 dB
.1 %	3.50 dB
.01 %	3.54 dB

Date: 21.DEC.2016 11:28:01

Diagram CCDF_192_8PSK

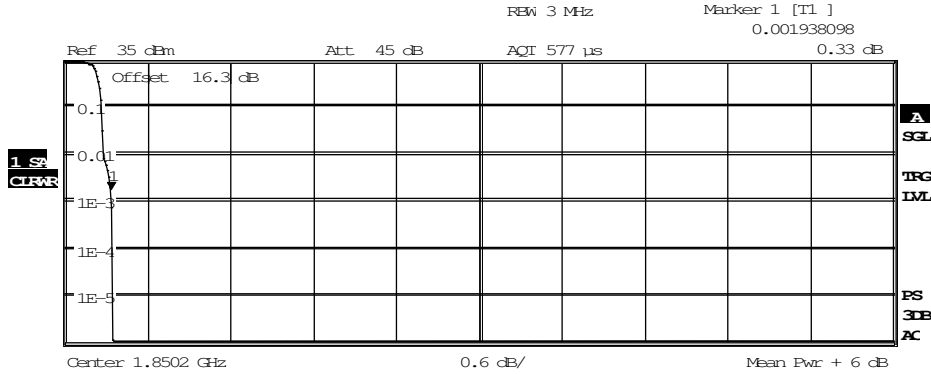


Complementary Cumulative Distribution Function
 NOF samples: 2308, Usable BW: 3.5MHz

Trace 1	
Mean	24.18 dBm
Peak	27.77 dBm
Crest	3.59 dB
10 %	2.75 dB
1 %	3.42 dB
.1 %	3.52 dB
.01 %	3.59 dB

Date: 21.DEC.2016 11:29:52

Diagram CCDF_251_8PSK
1.1.3. GSM 1900 (GMSK Modulation)



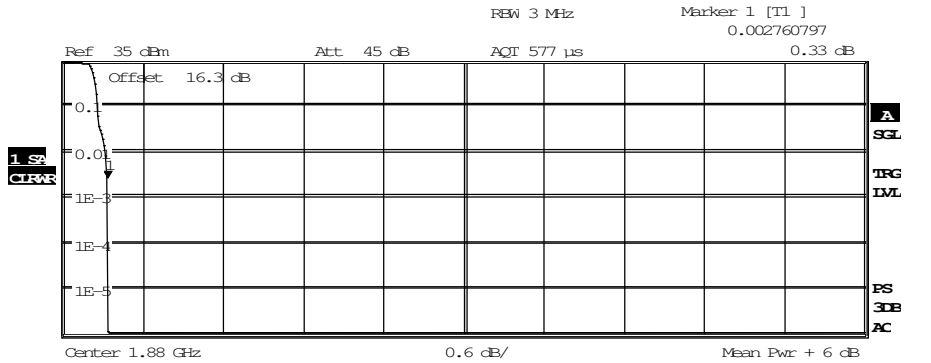
Complementary Cumulative Distribution Function
 NOF samples: 2308, Usable BW: 3.5MHz

Trace 1
 Mean 25.52 dBm
 Peak 25.87 dBm
 Crest 0.34 dB

10 %	0.26 dB
1 %	0.28 dB
.1 %	0.34 dB
.01 %	0.35 dB

Date: 21.DEC.2016 11:44:12

Diagram CCDF_512_GMSK



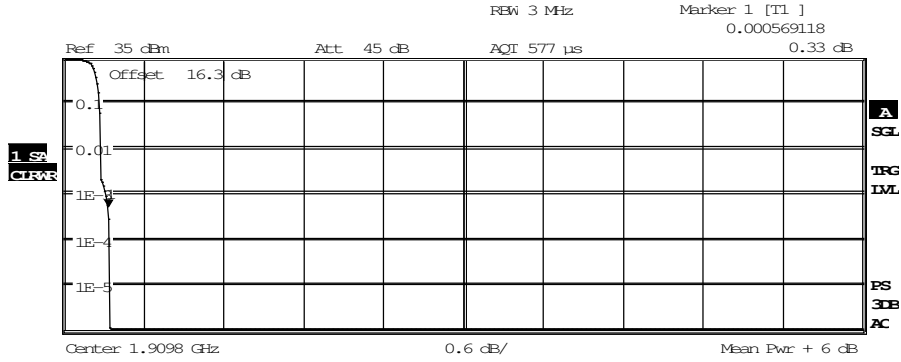
Complementary Cumulative Distribution Function
 NOF samples: 2308, Usable BW: 3.5MHz

Trace 1
 Mean 26.17 dBm
 Peak 26.50 dBm
 Crest 0.33 dB

10 %	0.26 dB
1 %	0.32 dB
.1 %	0.34 dB
.01 %	0.34 dB

Date: 21.DEC.2016 11:46:28

Diagram CCDF_661_GMSK



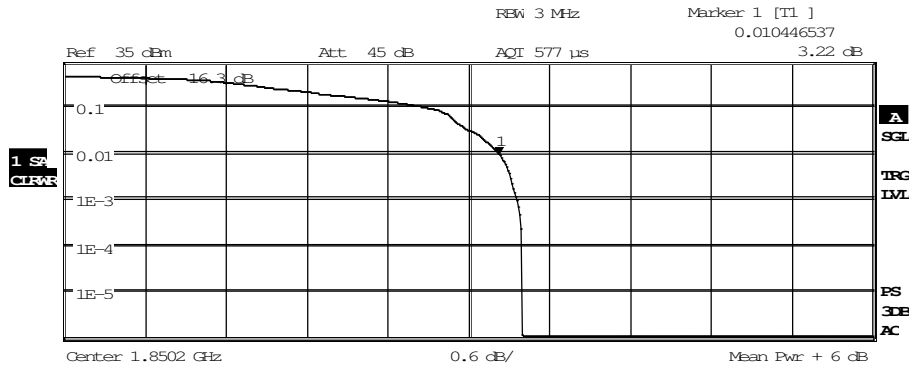
Complementary Cumulative Distribution Function
 NOF samples: 2308, Usable BW: 3.5MHz

Trace 1	
Mean	27.50 dBm
Peak	27.84 dBm
Crest	0.34 dB
10 %	0.27 dB
1 %	0.28 dB
.1 %	0.32 dB
.01 %	0.35 dB

Date: 21.DEC.2016 11:47:49

Diagram CCDF_810_GMSK

1.1.4. GSM 1900 (8-PSK Modulation)

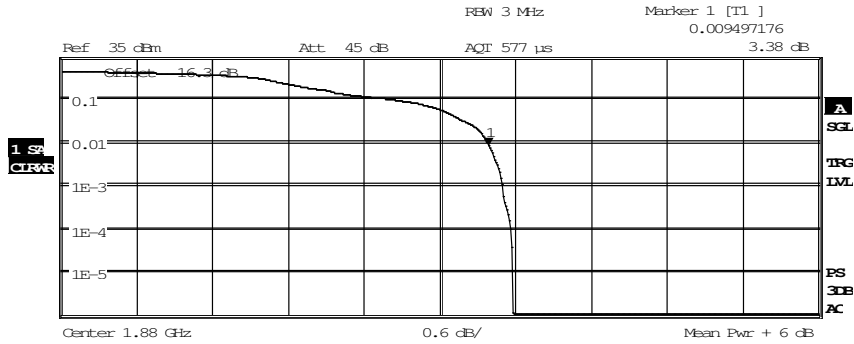


Complementary Cumulative Distribution Function
 NOF samples: 2308, Usable BW: 3.5MHz

Trace 1	
Mean	21.83 dBm
Peak	25.23 dBm
Crest	3.40 dB
10 %	2.71 dB
1 %	3.23 dB
.1 %	3.37 dB
.01 %	3.40 dB

Date: 21.DEC.2016 11:13:32

Diagram CCDF_512_8PSK



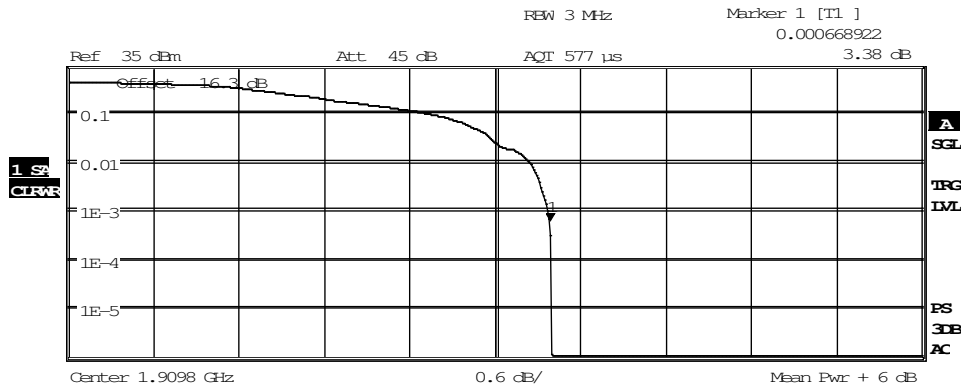
Complementary Cumulative Distribution Function
 NOF samples: 2308, Usable BW: 3.5MHz

Trace 1
 Mean 22.43 dBm
 Peak 26.01 dBm
 Crest 3.58 dB

10 %	2.67 dB
1 %	3.38 dB
.1 %	3.50 dB
.01 %	3.57 dB

Date: 21.DEC.2016 11:16:48

Diagram CCDF_661_8PSK



Complementary Cumulative Distribution Function
 NOF samples: 2308, Usable BW: 3.5MHz

Trace 1
 Mean 23.74 dBm
 Peak 27.14 dBm
 Crest 3.40 dB

10 %	2.57 dB
1 %	3.25 dB
.1 %	3.38 dB
.01 %	3.40 dB

Date: 21.DEC.2016 11:20:28

Diagram CCDF_810_8PSK

1.2. Magnetic field emissions radiated (850 MHz transmitting mode) Diagram No. 2.01_Magnetic_GPRS850_Ch192

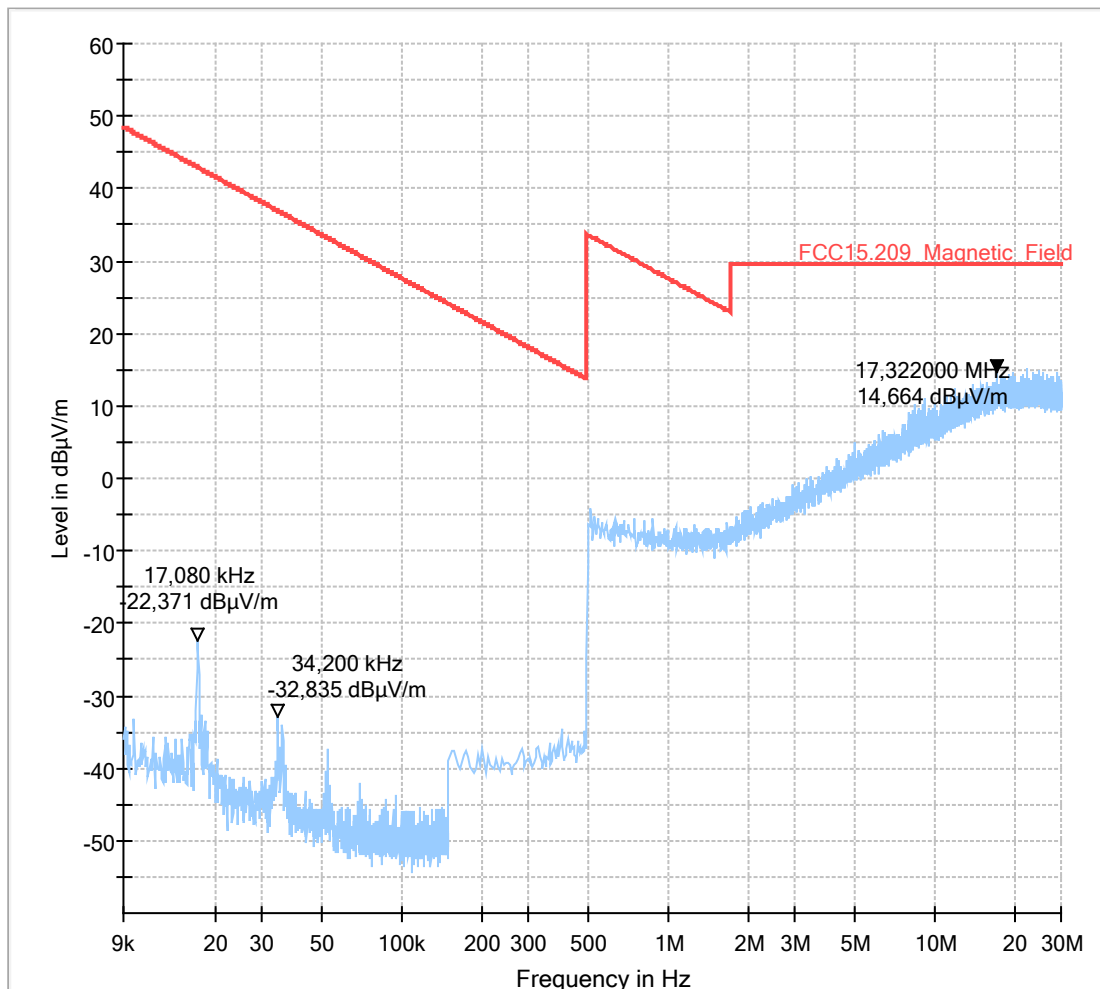
Date:	21.12.2016	Page 1 of 1
Test description:	Magnetic Field Strength Measurement related to 30/300 m distance	
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance	
Version of Testsoftware:	EMC32 V9.25.0	
Distance correction:	used accord. table, pls. see test report	
Technical Data:	Please see page 2 for detailed data of measurement setup	
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation	
Used filter:	bypass	
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 4	
Operator:	AFr	
Operating conditions:	GPRS Ch 192 (middle)	
Power during tests:	12 V DC (car battery)	

EUT Information

Manufacturer:	Bosch Car Multimedia Portugal, S.A.
EuT:	ECU CTPBASEDTNA

HW Version:	6794G05
SW Version:	DAIMLER_CTP_16.095.2.
Serial Number:	2800003466
Connected Interfaces:	USB-cable + main wiring + GSM/GNSS antenna
Power Supply:	12 V DC

Full Spectrum



1.3. Magnetic field emissions radiated 1900 MHz transmitting mode) Diagram No. 2.05_Magnetic_GSM1900_Ch661

Date:	22.12.2016	Page 1 of 1
Test description:	Magnetic Field Strength Measurement related to 30/300 m distance	
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance	
Version of Testsoftware:	EMC32 V9.25.0	
Distance correction:	used accord. table, pls. see test report	
Technical Data:	Please see page 2 for detailed data of measurement setup	
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation	
Used filter:	bypass	
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 4	

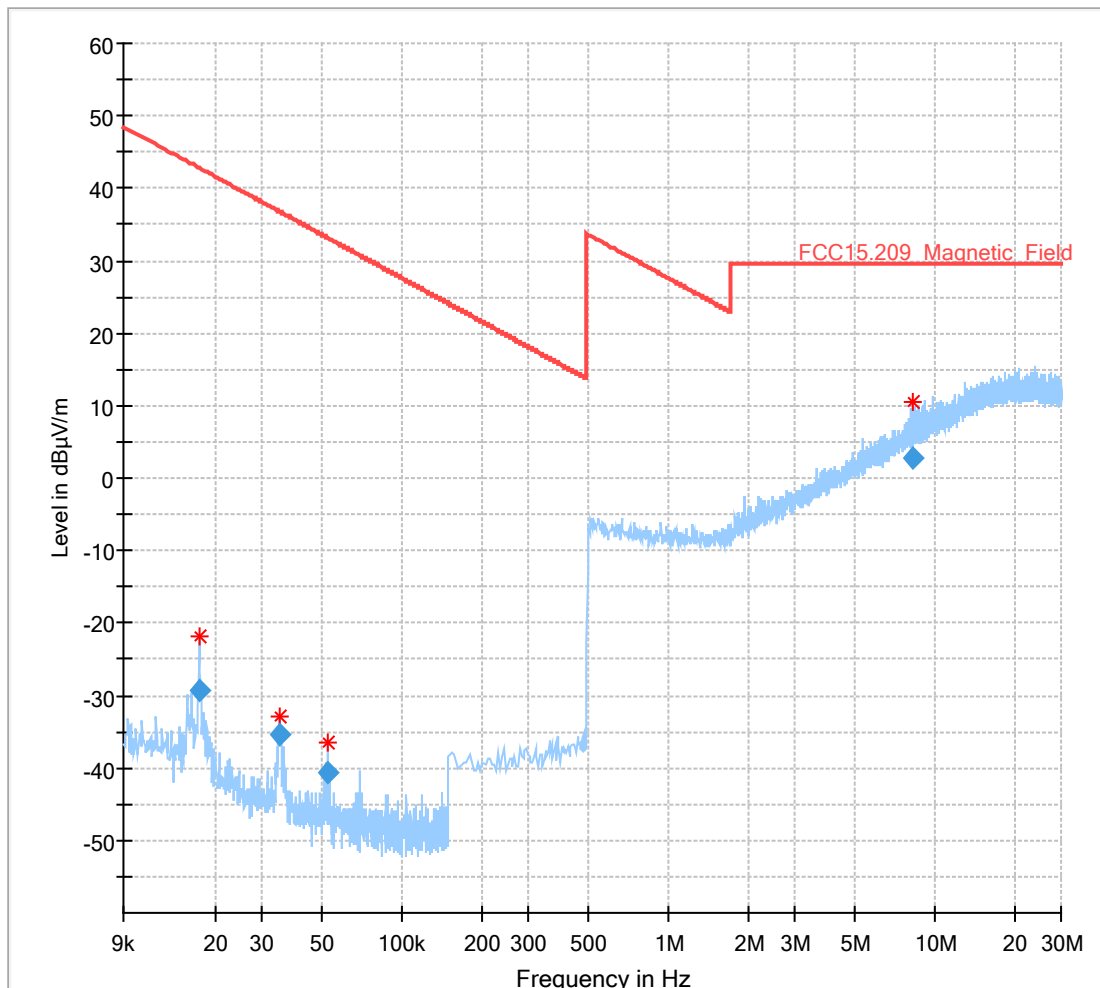
Operator:	YSa
Operating conditions:	TX-on
Power during tests:	12 V DC (car battery)

EUT Information

Manufacturer:	Bosch Car Multimedia Portugal, S.A.
EuT:	ECU CTPBASEDNA

HW Version:	6794G05
SW Version:	DAIMLER_CTP_16.095.2.
Serial Number:	2800003466
Connected Interfaces:	USB-cable + main wiring + GSM/GNSS antenna
Power Supply:	12 V DC

Full Spectrum



1.4. Spurious emissions radiated (850 MHz transmitting mode) 8.05_RSE_R_Ch192_GPRS

Common Information

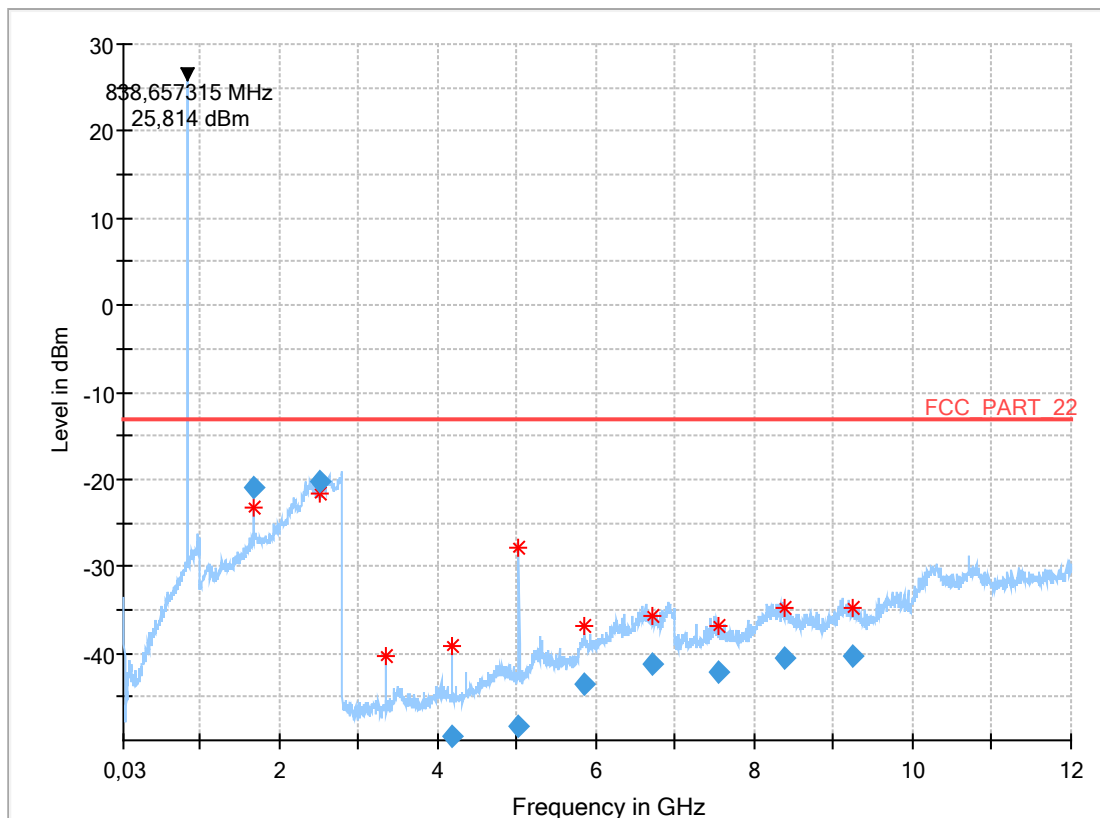
Test Description:	Radiated Emissions GSM850
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part22.917
Test Case:	GPRS_850
Operating Mode:	RSE_R_Ch192_GPRS
Exclusionband:	824 - 849MHz
Environmental Conditions:	Humidity: 40%rH; Temperature: 20°C
Operator:	TFR

EUT Information

Manufacturer:	Bosch Car Multimedia Portugal, S.A.
EuT:	ECU CTPBASEDTNA

HW Version:	6794G05
SW Version:	DAIMLER_CTP_16.095.2.
Serial Number:	2800003466
Connected Interfaces:	USB-cable + main wiring + GSM/GNSS antenna
Power Supply:	12 V DC

Full Spectrum



1.5. Spurious emissions radiated (1900 MHz transmitting mode)

8.14_RSE_R_Ch661_GPRS

Common Information

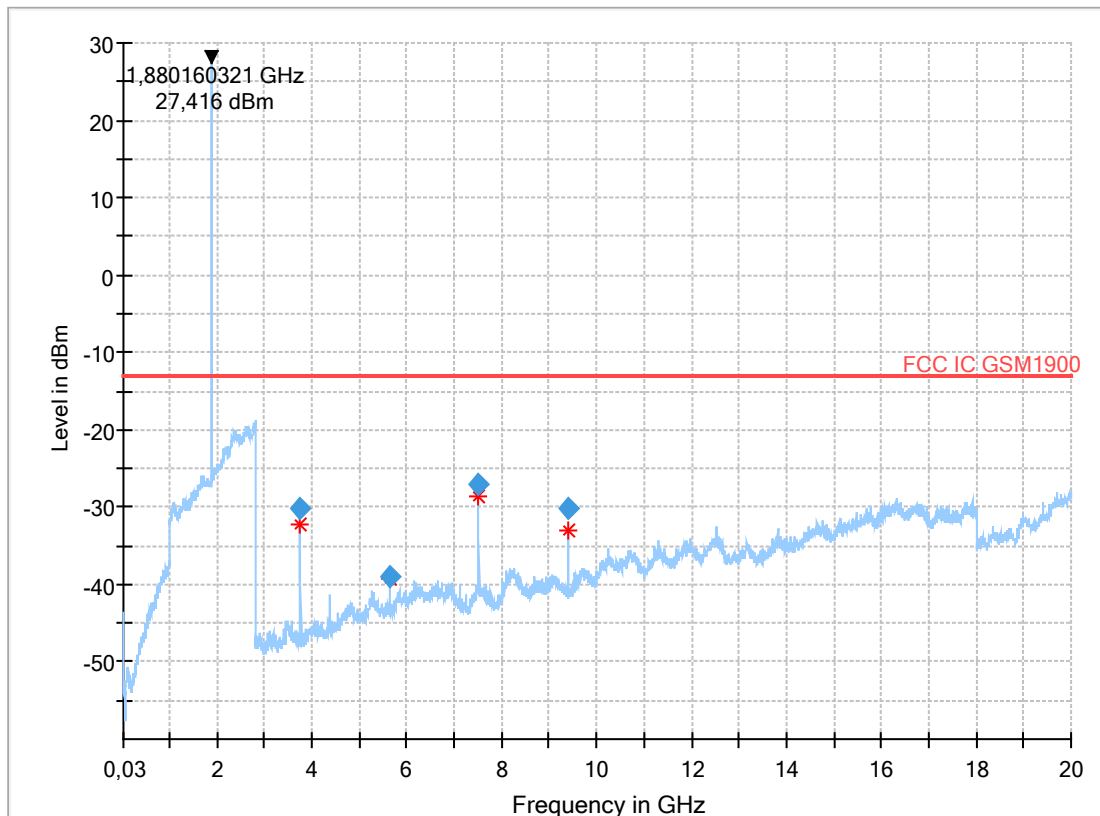
Test Description:	Radiated Emissions GSM850
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part24.238
Test Case:	-
Operating Mode:	MS allocated UL channel 512,661,810
Exclusionband:	1850 - 1910MHz
Environmental Conditions:	Humidity: 40%rH; Temperature: 20°C
Operator:	TFR

EUT Information

Manufacturer:	Bosch Car Multimedia Portugal, S.A.
EuT:	ECU cTP mid

HW Version:	67946794G05
SW Version:	16/41/01
Serial Number:	2820003843
Connected Interfaces:	USB-cable + main wiring + GSM/GNSS antenna
Power Supply:	12 V DC

Full Spectrum



Final Result

Frequency (MHz)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
3759.864729	-	17.22	1000.0	V	11.0	0.0	-95.1
5639.794589	-	26.08	1000.0	H	22.0	90.0	-89.7
7520.055110	-	14.07	1000.0	V	47.0	90.0	-83.4
9399.644288	-	17.24	1000.0	H	-26.0	90.0	-82.8

1.6. Radiated emissions on 850 MHz transmitting band-edge 9.03_BE_R_Ch128_GPRS

Common Information

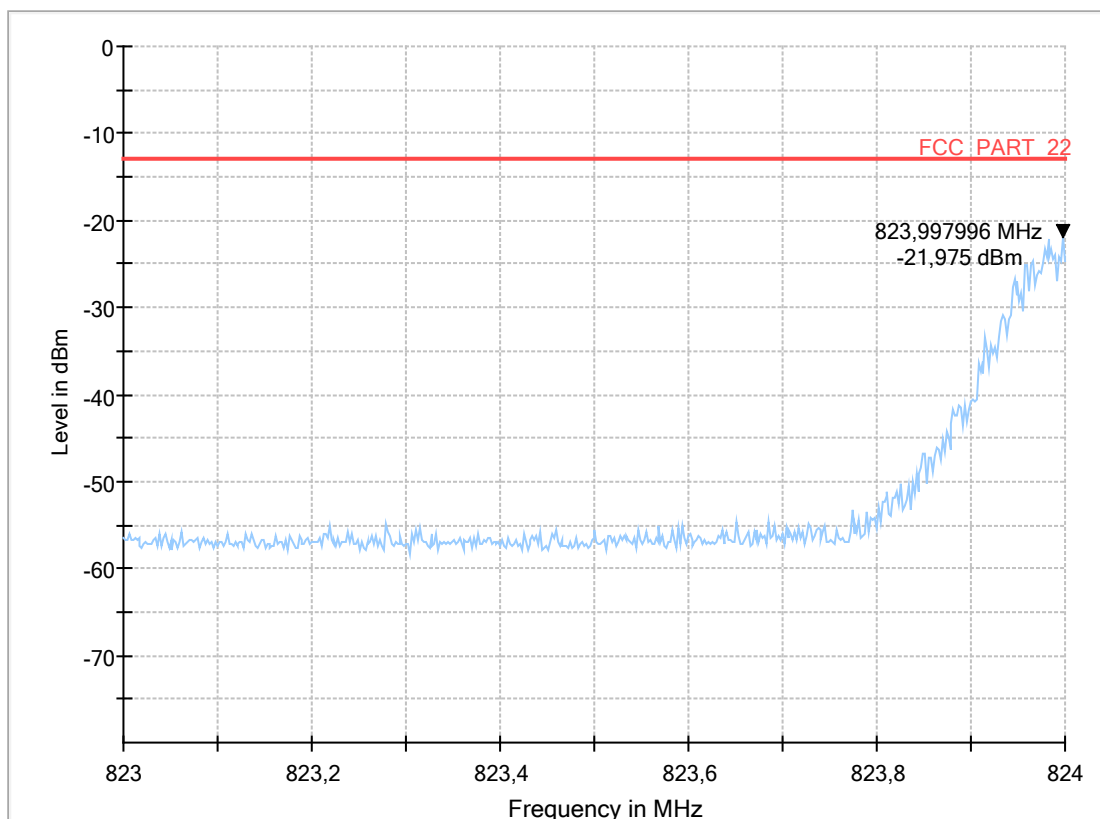
Test Description:	Radiated Band Edge Compliance GSM850
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 22.917
Operating Mode:	MS allocated channel 128 (fc = 824.2MHz), Voice, PCL5 (+33dBm)
Exclusionband:	824 - 849MHz
Environmental Conditions:	Humidity: 35%rH; Temperature: 20°C
Operator:	AFr

EUT Information

Manufacturer:	Bosch Car Multimedia Portugal, S.A.
EuT:	ECU CTPBASEDTNA

HW Version:	6794G05
SW Version:	DAIMLER_CTP_16.095.2.
Serial Number:	2800003466
Connected Interfaces:	USB-cable + main wiring + GSM/GNSS antenna
Power Supply:	12 V DC

Full Spectrum



9.04_BE_R_Ch251_GPRS

Common Information

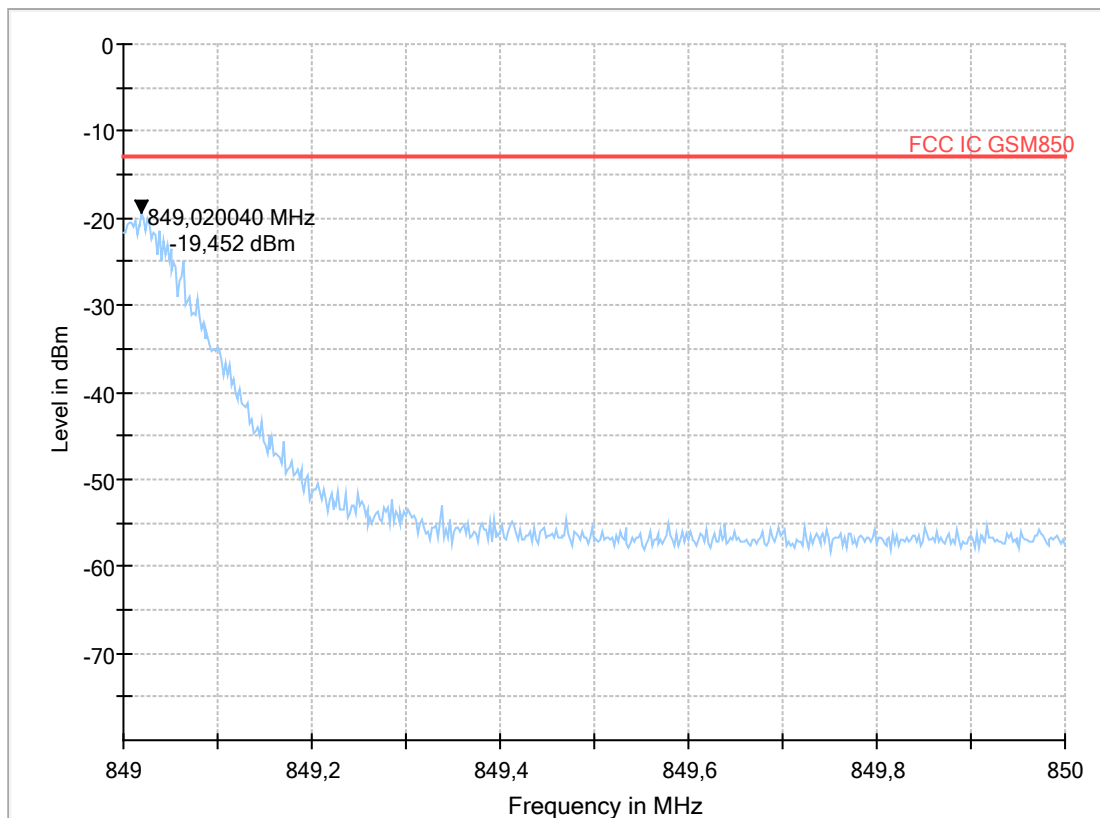
Test Description:	Radiated Band Edge Compliance GSM850
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 22.917
Operating Mode:	MS allocated channel 251 (fc = 848.8MHz), Voice, PCL0 (+33dBm)
Exclusionband:	824 - 849MHz
Environmental Conditions:	Humidity: 35%rH; Temperature: 20°C
Operator:	AFr

EUT Information

Manufacturer:	Bosch Car Multimedia Portugal, S.A.
EuT:	ECU CTPBASEDTNA

HW Version:	6794G05
SW Version:	DAIMLER_CTP_16.095.2.
Serial Number:	2800003466
Connected Interfaces:	USB-cable + main wiring + GSM/GNSS antenna
Power Supply:	12 V DC

Full Spectrum



1.7. Radiated emissions on 1900 MHz transmitting band-edge 9.09_BE_R_Ch512_GPRS

Common Information

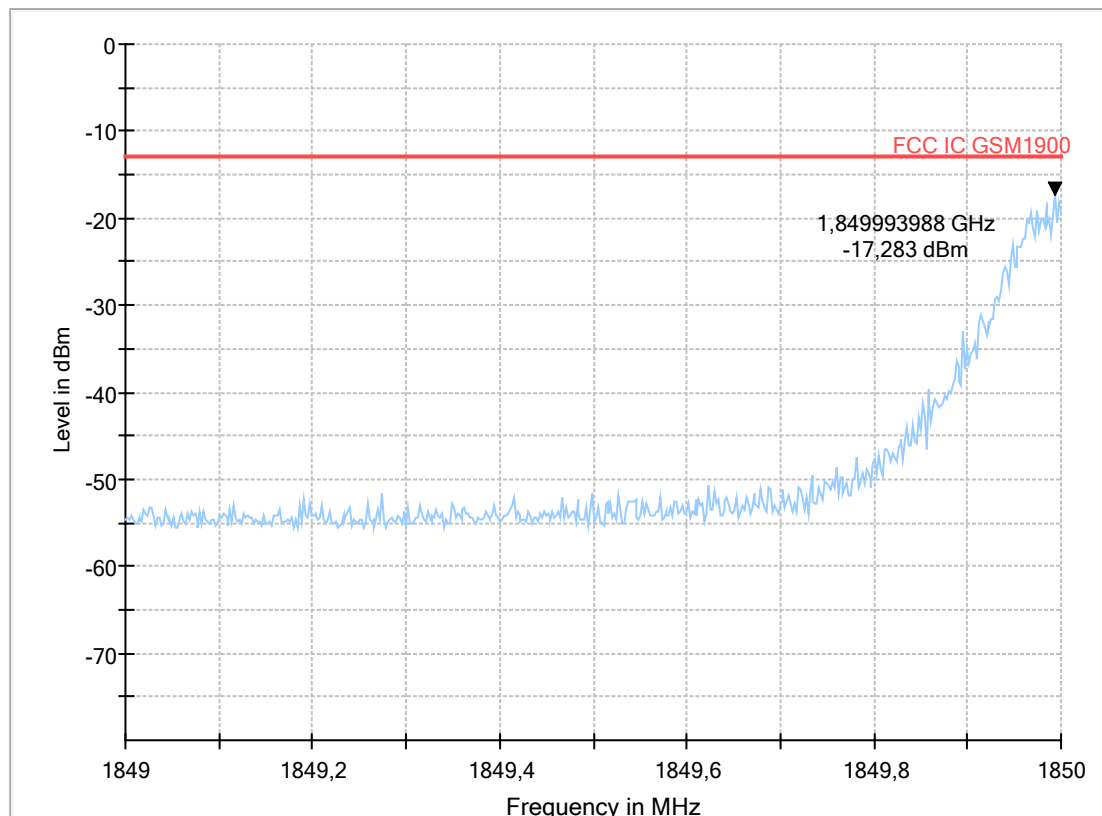
Test Description:	Radiated Spurious Emissions GSM1900
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24.238
Comm. Link:	GSM1900, Voice/EDGE
Operating Mode:	MS allocated channel 512 (UL = 1850.2MHz),661(UL = 1880.0MHz),810 (UL = 1909.8MHz)
Exclusionband:	1850- 1910MHz
Environmental Conditions:	Humidity: 40%rH; Temperature: 20°C
Operator:	AFr

EUT Information

Manufacturer:	Bosch Car Multimedia Portugal, S.A.
EuT:	ECU CTPBASEDNA

HW Version:	6794G05
SW Version:	DAIMLER_CTP_16.095.2.
Serial Number:	2800003466
Connected Interfaces:	USB-cable + main wiring + GSM/GNSS antenna
Power Supply:	12 V DC

Full Spectrum



9.10_BE_R_Ch810_GPRS

Common Information

Test Description:	Radiated Spurious Emissions GSM1900
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24.238
Comm. Link:	GSM1900, Voice/EDGE
Operating Mode:	MS allocated channel 512 (UL = 1850.2MHz),661(UL = 1880.0MHz),810 (UL = 1909.8MHz)
Exclusionband:	1850- 1910MHz
Environmental Conditions:	Humidity: 40%rH; Temperature: 20°C
Operator:	AFr

EUT Information

Manufacturer:	Bosch Car Multimedia Portugal, S.A.
EuT:	ECU CTPBASEDTNA
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HW Version:	6794G05
SW Version:	DAIMLER_CTP_16.095.2.
Serial Number:	2800003466
Connected Interfaces:	USB-cable + main wiring + GSM/GNSS antenna
Power Supply:	12 V DC

Full Spectrum

